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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/562,915	12/30/2005	Keiji Aota	DK-US055285	3812
22919 7590 07/11/2008 GLOBAL IP COUNSELORS, LLP 1233 20TH STREET, NW, SUITE 700 WASHINGTON, DC 20036-2680			EXAMINER DESAL, NAISHADH N	
			ART UNIT 2834	PAPER NUMBER
			MAIL DATE 07/11/2008	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/562,915

**Applicant(s)**

AOTA ET AL.

**Examiner**

NAISHADH N. DESAI

**Art Unit**

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 March 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/ICE)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asano et al (US 6218753) in view of Morrill (US 5260620).

2. As per independent claim 1:

A rotor comprising: a rotor core having a rotor surface (Fig 1 of Asano et al);

a plurality of permanent magnets embedded in the rotor core with each of the permanent magnets defining a pole of the rotor, each pole of the rotor having a pole center; (Fig 1 of Asano et al),

a plurality of first non-magnetic layers being located between adjacent pairs of the permanent magnets along the rotor surface, each first non-magnetic layer being

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continuous or adjacent to a peripheral edge section of one of the permanent magnets in a vicinity between the poles and a vicinity of the rotor surface; and (Fig 1 of Asano et al)

a plurality of second non-magnetic layers being located in a vicinity of the rotor surface at pole center side positions with respect to the first non-magnetic layers (Fig 3 of Asano et al),

the first non-magnetic layers and the second non-magnetic layers being positioned to cancel n-th order harmonics ,where n is an odd number and is equal to or greater than 3 of an induction voltage (it is inherent to those skilled in the art that the non-magnetic layers would be positioned to cancel n-th order harmonics or torque ripples (Col 2 lines 5-14 of Asano et al)) the first non-magnetic layers and the second non-magnetic layers being positioned symmetrically relative to the pole centers (Fig 3 of Asano et al),

Asano et al teaches the device as claimed above. Asano et al do not explicitly mention the fact that the first and second non-magnetic layers are used to cancel third order harmonics. Morrill teaches to cancel third order harmonic (Col 1 ll 35-36). It would have been obvious to a person having ordinary skills in the art at the time the invention was made to modify the device of Asano et al with the teachings of Morrill to make a device where the third order harmonics are cancelled. The motivation to do so would be that it would allow one predict the speed exactly so that the motor can be produced for specific applications (Col 1 ll 43-46 of Morrill).

Asano et al discloses the claimed invention except for mentioning that the first and second non-magnetic layers can be used to cancel third order harmonics. It has been

held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987).

3. Regarding claims 2 and 3:

Morrill teaches the cancellation of third and other order harmonics (Col 1 ll 35-38). It would have been obvious to one having ordinary skills in the art at the time the invention was made to make the n-th order harmonics other multiples of 3, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In *re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

4. Regarding claim 4:

Col 1 ll 35-38 of Asano et al speaks of cancelling 5-th order harmonics.

5. Regarding claim 5:

Figures 6 and 7 of Asano et al shows the first and second non-magnetic layers to be independent and the peripheral edges of the permanent magnets to be independent from each other.

6. Regarding claims 6-9:

Figure 7 and Col 3 lines 34-41 of Asano et al disclose different angles for the non magnetic sections.

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It would have been obvious to a person having ordinary skills in the art at the time the invention was made to modify and manipulate the angles of Asano et al with the 3-rd and 5-th harmonic revelations of Morrill to derive the formula and angles as claimed. The motivation to do so would be that it would eliminate unbalance, reduce leakage flux, noise and vibrations of the motor (Col 3 lines 59-63 of Asano et al). The motivation would also be that it would allow one to produce a motor for specific desired applications (Col 1 ll 44-46 of Morrill).

7. Regarding claim 10:

Figs 1 and 6 of Asano et al shows the magnets to be divided into multiple layers in the radial direction.

8. Regarding claims 11-18:

Figure 7, 15A-B and Col 3 lines 34-41 of Asano et al disclose a rotor core with different angles for the non magnetic sections, wherein the permanent magnets are divided into two layers in the radial direction. The motor of Asano et al has 4 poles, which computes to make the angles fall well within the ranges of the formulas as claimed.

Asano et al discloses the claimed invention except for explicitly showing that the angles fall within the range as claimed. It would have been obvious to one having ordinary skills in the art at the time the invention was made to fall within the claimed range since it has been held that where the general conditions of a claim are disclosed in the prior art,

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discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

9. Regarding claim 19:

Figures 14 and 15A-B of Asano et al shows the magnets to be divided into multiple layers in the radial direction.

10. Regarding claim 20:

Figure 7, 15A-B and Col 3 lines 34-41 of Asano et al disclose a rotor core having different angles for the non magnetic sections, where in the permanent magnets are divided into two layers in a radial direction. The motor of Asano et al has 4 poles, which computes to make the angles fall well within the ranges of the formulas as claimed.

It would have been obvious to a person having ordinary skills in the art at the time the invention was made to modify and manipulate the angles of Asano et al with the 3-rd and 5-th harmonic revelations of Morrill to derive the formula and angles as claimed.

The motivation to do so would be that it would eliminate unbalance, reduce leakage flux, noise and vibrations of the motor (Col 3 lines 59-63 of Asano et al). The motivation would also be that it would allow one to produce a motor for specific desired applications (Col 1 ll 44-46 of Morrill).

11. Regarding claim 21:

Claim 21 is a newly added independent claim which is similar to independent claim 1, except for "the peripheral edge sections and the non-magnetic layers being positioned to cancel n-th order harmonics... the non-magnetic layers being positioned symmetrically to the pole centers". Asano et al teaches the permanent magnet rotor structure as claimed, including illustrating that the peripheral edge sections and the non-magnetic layers being positioned to cancel n-th order harmonics"(Figs 3 and 10D). Asano et al also clearly teach that "the non-magnetic layers are positioned symmetrically to the pole centers" (Figs 3 and 10D). Asano et al is silent regarding the cancellation of harmonics in their disclosure, however Morrill teaches the cancellation of 3<sup>rd</sup> and other order harmonics (Col 1 ll 43-46 of Morrill).

### ***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892 for details.
13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any



extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

***Response to Arguments***

14. Applicant's arguments filed 3/24/2008 have been fully considered but they are not persuasive. Applicant's argument that Asano et al do not teach the non-magnetic layers to be symmetrically positioned relative to the pole centers of the rotor poles are not persuasive. Asano et al teaches both symmetrical and non-symmetrically positioned non-magnetic layers relative to the pole centers of the rotor poles. Figs 3 and 10D of Asano et al teaches symmetrically positioned non-magnetic layers, while other Figs of Asano et al teaches asymmetrically positioned non-magnetic layers. It is clear that Asano et al teaches symmetrically positioned non-magnetic layers.

Regarding applicant's argument that Asano et al do not teach third or other multiples of harmonics, Morrill teaches to cancel third order harmonic (Col 1 ll 35-36). One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

15. According to § 2111 of the MPEP, claims must be given their broadest reasonable interpretation. A portion of this section is cited below for the practitioner's convenience:

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During patent examination, the pending claims must be "given \*>their< broadest reasonable interpretation consistent with the specification." >*In re Hyatt*, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000).< Applicant always has the opportunity to amend the claims during prosecution, and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. See *In re Prater*, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969).

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Naishadh N. Desai whose telephone number is (571) 270-3038. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on (571) 272-2044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BURTON MULLINS/  
Primary Examiner, Art Unit 2834

Naishadh N Desai  
Patent Examiner